

Amendments to the Claims:

The listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

Claim 1. (Currently Amended) A treated manganese dioxide ore for use in producing manganese sulfate therefrom, said treated ore having a degree of manganese dissolution of 98.0 % by weight or higher based on the manganese contained in the treated manganese dioxide ore when dissolved in sulfuric acid and having a degree of manganese dissolution of 70 % by weight or higher based on the iron contained in the treated manganese dioxide ore when dissolved in sulfuric acid.

Claim 2. (Canceled)

U Claim 3. (Previously Amended) The treated manganese dioxide ore of Claim 1, wherein the ratio of the amount of potassium soluble in sulfuric acid to that of manganese contained in the treated manganese dioxide ore by weight is 0.001 or lower.

Claim 4. (Previously Amended) The treated manganese dioxide ore of Claim 1, which is prepared by contacting a manganese dioxide ore with a reducing gas at a temperature ranging from 400 to 790° C.

Claim 5. (Previously Amended) A treated manganese dioxide ore prepared by immersing the treated manganese dioxide ore of Claim 4 in water having a temperature ranging from 70° C to the boiling point thereof as measured at atmospheric pressure.

Claim 6. (Previously Amended) The treated manganese dioxide ore of Claim 1 or 5,

which has a particle size of 500 μm or smaller.

Claim 7. (Currently Amended) A process for producing the treated manganese dioxide ore of Claim 1, which consists essentially of:

contacting a manganese dioxide ore with a reducing gas consisting of at least one gaseous reducing agent or a combination of at least one gaseous reducing agent diluted with an inert gas, said gaseous reducing agent being selected from the group consisting of hydrogen, carbon monoxide and methane in an amount ranging from 1.0 to 2.0 times the theoretical amount required to reduce the manganese dioxide ore at a temperature ranging from 400 to 790° C; and cooling the reduced manganese ore in a non-oxidizing atmosphere, thereby preparing said treated manganese dioxide ore from which manganese sulfate is produced.

Claim 8. (Previously Amended) The process for producing a treated manganese dioxide ore of Claim 7, wherein the manganese dioxide ore is pulverized to a particle size of 500 μm or smaller before the reduced ore is obtained therefrom.

Claim 9. (Currently Amended) The process for producing a treated manganese dioxide ore of Claim 7, wherein the manganese dioxide ore is kept in contact with the gaseous reducing agent at a temperature ranging from 400 to 790° C thereby producing treated ~~for a necessary period to produce said~~ manganese dioxide ore which exhibits an ~~of which the~~ iron dissolution degree is of 70 % or higher by weight when said manganese dioxide ore is ~~dissolved~~ placed in sulfuric acid.

Claim 10. (Previously Amended) A process for producing the treated manganese dioxide ore of Claim 1, which consists essentially of:

contacting a manganese dioxide ore with a reducing gas consisting of at least one gaseous

reducing agent or a combination of at least one gaseous reducing agent diluted with an inert gas, said gaseous reducing agent being selected from the group consisting of hydrogen, carbon monoxide and methane in an amount ranging from 1.0 to 2.0 times the theoretical amount required to reduce the manganese dioxide ore at a temperature ranging from 400 to 790° C; and immersing the reduced ore obtained in water having a temperature ranging from 70° C to the boiling point thereof as measured at atmospheric pressure, thereby preparing said treated manganese dioxide ore from which manganese sulfate is produced.

Claim 11. (Previously Amended) The process for producing the treated manganese dioxide ore of Claim 10, which further comprises washing the reduced ore obtained.

Claim 12. (Previously Amended) The process for producing the treated manganese dioxide ore of Claim 10, which further comprises washing and then filtering the reduced ore obtained.

Claims 13-15. (Canceled)

Claim 16. (Previously Amended) The process for producing the treated manganese dioxide ore of Claim 7, wherein the time period of the contact of the reducing gas with the manganese dioxide ore ranges from 20 to 120 minutes.

Claim 17. (Previously Amended) The process for producing the treated manganese dioxide ore of Claim 7, wherein the contact of the reducing gas with the manganese dioxide ore is conducted continuously with a rotary kiln.

Claim 18. (Previously Amended) The process for producing a treated manganese dioxide ore of Claim 17, wherein the rotary kiln has a cylindrical or prismatic shape.

Claim 19. (Previously Amended) The process for producing a treated manganese dioxide

ore of Claim 17, wherein the rotary kiln is equipped with a device for mixing the ore with the reducing gas.

Claim 20. (Previously Amended) The process for producing a treated manganese dioxide ore of Claim 19, wherein the device for mixing the ore with the reducing gas comprises one or more movable stirring blades installed in the kiln or one or more stirring blades fixed to the inner wall of the kiln.

Claim 21. (Previously Amended) The process for producing a treated manganese dioxide ore of Claim 7, wherein the process is conducted continuously.

Claim 22. (Previously Amended) The process for producing a treated manganese dioxide ore of Claim 8, wherein the process is conducted continuously.

Claim 23. (Previously Amended) The process for producing a treated manganese dioxide ore of Claim 10, wherein the process is conducted continuously.

Claim 24. (Previously Amended) The process for producing a treated manganese dioxide ore of Claim 10, wherein the reduced ore is cooled in a nonoxidizing atmosphere and then immersed in water.

Claim 25. (Previously Amended) The process for producing a treated manganese dioxide ore of Claim 10, wherein the reduced ore is immersed in water and then cooled in a nonoxidizing atmosphere. {then.}

Claim 26. (Previously Amended) The process for producing a treated manganese dioxide ore of Claim 24, wherein the reduced ore is continuously cooled.

Claim 27. (Previously Amended) The process for producing a treated manganese dioxide ore of Claim 25, wherein the reduced ore is continuously cooled.

Claim 28. (Previously Amended) The process for producing a treated manganese dioxide ore of Claim 10, wherein the immersion of the reduced ore in water is conducted so as to yield a slurry in which the concentration of the reduced ore ranges from 10 to 40 % by weight.

Claim 29. (Previously Amended) The process for producing a treated manganese dioxide ore of Claim 10, wherein the immersion of the reduced ore in water is conducted for a period ranging from 1 to 24 hours.

Claim 30. (Previously Amended) The process for producing a treated manganese dioxide ore of Claim 10, wherein the immersion of the reduced ore in water is conducted in one or more stirring tanks for continuous processing.

Claim 31. (Canceled)

Claim 32. (Previously Amended) A process for producing electrolytic manganese dioxide which comprises:

adding sulfuric acid to the treated manganese dioxide ore of Claim 1 or 5 to dissolve the ore, thereby preparing an aqueous solution of manganese sulfate;

purifying the aqueous solution of manganese sulfate; and then

subjecting the purified solution to electrolytic oxidation to oxidize the manganese sulfate.

Claim 33. (Previously Amended) A process for producing electrolytic manganese dioxide which comprises:

preparing a treated manganese dioxide ore by the process of Claim 7;

adding sulfuric acid to the treated manganese ore to dissolve the ore, thereby preparing an aqueous solution of manganese sulfate;

purifying the aqueous solution of manganese sulfate; and then

subjecting the purified solution to electrolytic oxidation to oxidize the manganese sulfate.

C1 Claim 34. (Previously Amended) An electrolytic manganese dioxide which is used in batteries and which is prepared by:

dissolving the treated manganese dioxide ore of Claim 1 or 5 in sulfuric acid, thereby forming an acid manganese sulfate solution;

purifying the acid manganese sulfate solution; and

electrolytically oxidizing the manganese sulfate solution.

Claim 35. (New) The process for producing a treated manganese dioxide ore of Claim 7, wherein the manganese dioxide ore contains from 20 to 60 % by weight manganese and from 1 to 15 % by weight iron.

(2) Claim 36. (New) The process for producing a treated manganese dioxide ore of Claim 35, wherein the manganese dioxide ore is pyrolusite or psilomelane.

Claim 37. (New) The process for producing a treated manganese dioxide ore of Claim 10, wherein the manganese dioxide ore contains from 20 to 60 % by weight manganese and from 1 to 15 % by weight iron.

Claim 38. (New) The process for producing a treated manganese dioxide ore of Claim 37, wherein the manganese dioxide ore is pyrolusite or psilomelane.
